

CLAIMS

1. A photovoltaic power generator providing power generated by a solar battery panel through a DC-DC converter, wherein

5 a maximum power condition of the solar battery panel is explored by controlling the DC-DC converter based on an output power of the solar battery panel at a time point at which a time differentiation value of the output voltage of the solar battery panel substantially becomes zero.

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2. The photovoltaic power generator according to claim 1, wherein
the maximum power condition of the solar battery panel is explored based on a difference between a first output power of the solar battery panel at a first time point and a second output power
15 of the solar battery panel at a second time point in which the time differentiation value of the output voltage becomes substantially zero at the first and second time points.

3. The photovoltaic power generator according to claim 2, wherein
20 the difference between the first output power and the second output power is calculated based on values obtained by integrating the time differentiation of the output power of the solar battery panel from the first time point to the second time point.

25 4. The photovoltaic power generator according to any one of claims 1 to 3, wherein the controlling of the DC-DC converter is that of switching conduction ratio.

30 5. The photovoltaic power generator according to any one of claims 2 to 4, wherein a switching ripple of the DC-DC converter is used

as a sweep signal for exploring the maximum power condition.

6. The photovoltaic power generator according to any one of claims 1 to 5, wherein

5 the time point at which the time differentiation value of the output voltage of the solar battery panel substantially becomes zero is determined as a time point at which a current passing through an equivalent capacitor of the solar battery panel substantially becomes zero.

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7. A control method of a photovoltaic power generator providing power generated by a solar battery panel through a DC-DC converter, comprising:

detecting a time point at which a time differentiation value
15 of an output voltage of the solar battery panel substantially becomes zero; and

controlling the DC-DC converter based on the output power of the solar battery panel at the detected time point to explore the maximum power condition of the solar battery panel.

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8. The control method of the photovoltaic power generator according to claim 7, wherein

in the procedure of controlling the DC-DC converter, the DC-DC converter is controlled based on a difference between a first
25 output power of the solar battery panel at the first time point at which a time differentiation value of the output voltage substantially becomes zero and a second output power of the solar battery panel at the second time point at which a time differentiation value of the output voltage substantially becomes zero.

9. The control method of the photovoltaic power generator according to claim 7 or 8, wherein a switching ripple of the DC-DC converter is used as a sweep signal for exploring the maximum power
5 condition.